

AMENDMENTS TO THE CLAIMS

1. (Original) An improved process for preparing a crosslinked article of manufacture comprising the steps

(a) melt processing a crosslinkable polymeric composition comprising

- (1) a free-radical crosslinkable polymer,
- (2) a free-radical inducing species, and
- (3) a crosslinking-temperature-profile modifier,

at a melt processing temperature greater than the nominal melt processing temperature of a combination of the free-radical crosslinkable polymer and the free-radical inducing species;

(b) forming an article of manufacture from the crosslinkable polymeric composition; and

(c) crosslinking the crosslinkable polymeric composition at the nominal crosslinking temperature as a formed article of manufacture.

2. (Original) The improved process of Claim 1 wherein the free-radical crosslinkable polymer being hydrocarbon-based.

3. (Original) The improved process of Claim 1 wherein the free-radical crosslinkable polymer is selected from the group consisting of ethylene/propylene/diene monomers, ethylene/propylene rubbers, ethylene/alpha-olefin copolymers, ethylene homopolymers, ethylene/unsaturated ester copolymers, ethylene/styrene interpolymers, halogenated polyethylene, propylene copolymers, natural rubber, styrene/butadiene rubber, styrene/butadiene/styrene block copolymers, styrene/ethylene/butadiene/styrene copolymers, polybutadiene rubber, butyl rubber, chloroprene rubber, chlorosulfonated polyethylene rubber, ethylene/diene copolymer, and nitrile rubber, and blends thereof.

4. (Original) The improved process of Claim 3 wherein the free-radical crosslinkable polymer being a propylene polymer and the crosslinking temperature profile modifier suppresses chain scission of the propylene polymer.

5. (Original) The improved process of Claim 1 wherein the free-radical inducing species being selected from the group consisting of organic peroxides, Azo free radical initiators, bicumene, oxygen, and air.
6. (Original) The improved process of Claim 1 wherein the crosslinking temperature profile modifier being a free radical inhibitor.
7. (Original) The improved process of Claim 6 wherein the free radical inhibitor being selected from the group consisting of (i) hindered amine-derived stable organic free radicals, (ii) iniferters, (iii) organometallic compounds, (iv) aryl azooxy radical, and (v) nitroso compounds.
8. (Original) The improved process of Claim 7 wherein the free radical inhibitor being a hindered amine-derived stable organic free radical selected from the group consisting of 2,2,6,6,-tetramethyl piperidinyl oxy (TEMPO) and derivatives thereof.
9. (Original) The improved process of Claim 8 wherein the stable organic free radical being a derivative of 2,2,6,6,-tetramethyl piperidinyl oxy selected from the group consisting of bis-TEMPOs, oxo-TEMPO, 4-hydroxy-TEMPO, esters of 4-hydroxy-TEMPO, polymer-bound TEMPO, PROXYL, DOXYL, di-tertiary butyl N oxyl, dimethyl diphenylpyrrolidine-1-oxyl, 4 phosphonoxy TEMPO, and metal complexes with TEMPO.
10. (Original) The improved process of Claim 7 wherein the free radical inhibitor being an iniferter selected from the group consisting of tetraethyl thiuram disulfide, benzyl NN diethyldithiocarbamate, dithiocarbamates, polythiocarbamates, and S benzyl dithiocarbamate.
11. (Original) The improved process of Claim 1 wherein the crosslinkable polymeric composition achieves the same degree of cure or a higher degree of cure than the combination would achieve in the absence of the crosslinking-temperature-profile modifier.
12. (Original) The improved process of Claim 1 wherein the crosslinkable polymeric composition further comprises a cure booster.
13. (Original) The improved process of Claim 1 wherein the free-radical crosslinkable polymeric composition further comprises a catalyst for increasing free-radical formation,

selected from the group consisting of tertiary amines, cobalt naphthenate, manganese naphthenate, vanadium pentoxide, and quaternary ammonium salt.

14. (Original) An improved process for preparing a crosslinked article of manufacture comprising melt processing a crosslinkable polymeric composition comprising

- (1) a free-radical crosslinkable polymer,
- (2) a free-radical inducing species, and
- (3) a crosslinking-temperature-profile modifier,

at a melt processing temperature greater than the nominal melt processing temperature of a combination of the free-radical crosslinkable polymer and the free-radical inducing species.

15. (Canceled)

16. (Original) An improved process for preparing a crosslinked article of manufacture comprising the steps

(a) melt processing a crosslinkable polymeric composition comprising

- (1) a free-radical crosslinkable polymer,
- (2) a free-radical inducing species, and
- (3) a crosslinking-temperature-profile modifier,

wherein

- (i) in the absence of the crosslinking-temperature-profile modifier, a combination of the free-radical crosslinkable polymer and the free-radical inducing species has a nominal processing rate and
- (ii) the crosslinking-temperature-profile modifier permits running the process at least about 5 percent faster than the nominal processing rate, and

at a melt processing temperature greater than the nominal melt processing temperature of a combination of the free-radical crosslinkable polymer and the free-radical inducing species;

(b) forming an article of manufacture from the crosslinkable polymeric composition; and

(c) crosslinking the crosslinkable polymeric composition as a formed article of manufacture.

17. (Original) The improved process of Claim 16 wherein the crosslinking step occurs at a temperature greater than the nominal crosslinking temperature.

Claims 18 through 23 (Canceled)

24. (Original) An improved process for preparing a crosslinked article of manufacture comprising melt processing a crosslinkable polymeric composition comprising

- (1) a free-radical crosslinkable polymer,
- (2) a free-radical inducing species, and
- (3) a crosslinking-temperature-profile modifier wherein TS1 being an indication of premature crosslinking of a combination of the free-radical crosslinkable polymer and the free-radical inducing species,

at a melt processing temperature greater than the nominal melt processing temperature while maintaining TS1 at least equal to the TS1 of a combination of the free-radical crosslinkable polymer and the free-radical inducing species at the nominal melt processing temperature.

25. (Currently amended) The improved process of ~~any of~~ Claims 23 or 24 wherein TS1 of the combination being at least 20 minutes.

26. (Currently amended) The improved process of ~~any of~~ Claims 23 or 24 wherein, at the melt processing temperature, the processing rate being at least about 5 percent faster than the nominal processing rate.

27. (Original) An improved process for preparing an expanded, crosslinked article of manufacture comprising the steps of

- (a) injecting at an injection temperature an expandable, free-radical crosslinkable polymeric composition of into a mold at a mold temperature, wherein the expandable, free-radical crosslinkable polymeric composition comprises
 - (A1) a free-radical crosslinkable polymer;
 - (A2) a free-radical inducing species;
 - (A3) a crosslinking-temperature-profile modifier; and
 - (A4) a blowing agent selected from the group consisting of chemical blowing agents and physical blowing agents;
- (b) heating the expandable, free-radical crosslinkable polymeric composition for a period of time to a crosslinking temperature sufficient to expand and crosslink the expandable, crosslinkable polymeric composition;

- (c) removing the expandable, free-radical crosslinkable polymeric composition from the mold; and
- (d) expanding and crosslinking the expandable, free-radical crosslinkable polymeric composition to an expanded, crosslinked article of manufacture.

Claims 28-41 (Canceled)